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RESOURCE ALLOCATION TRENDS IN THE USSR 1955-65

1 June 1962

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RESOURCE ALLOCATION TRENDS IN THE USSR*
1955-65

Summary

1. The general trends in Soviet allocations of resources during the years following the Korean War have been as follows:

a. A rapid growth in investment and an increase in its share of gross national product (GNP)

b. A decline in the defense share of GNP

c. A decline in the consumption share of GNP

2. These trends, which suggest a primary preoccupation with economic growth, appear to have been interrupted in 1961. The growth of investment began to slow down in 1960. Defense expenditures show signs of accelerating somewhat in 1962, and the decline in the defense share of GNP may have been halted earlier.

3. Shares of GNP are too gross a measure to disclose difficult areas of competition for resources. This competition centers around the resources needed for the space and new weapons programs and particularly the research and development phases of these programs, which have been growing rapidly and are now large enough to be significant at the margin. Moreover, the programs demand machinery of the highest quality, as well as special materials and the highest caliber of scientific engineering and technical and specialized manpower.

4. Many of these same resources also are needed for the programs of modernization and technological improvement in industry and agriculture. The Soviet leadership can be expected to move vigorously to overcome specific bottlenecks that may have developed in 1961, but competition

* The estimates and conclusions in this memorandum represent the best judgment of this Office as of 31 May 1962.

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for resources in the longer run will pose difficult choices. The problem of the Soviet regime for the next few years is to ration these scarce specialized resources among the competing demands of defense, space, and economic growth. We judge that the total investment in defense, research and development, and space must be kept within a constant share of GNP at about the current level in order for the economy to maintain an annual rate of growth of 5 to 6 percent. We believe that Khrushchev does not have the option that Stalin had of choosing one objective above all others. Thus over the next few years defense expenditures are not likely to vary widely either up or down from a constant share of GNP. Which of the two, defense or economic growth, will be slightly favored over the other we cannot judge at this time.

5. The estimates for 1961 and the projections for 1962 in this memorandum are preliminary. Research now underway in support of current National Estimates may result in significant revisions.

I. Trends in Gross National Product

GNP measures for the USSR are too aggregative to disclose the more critical areas of competition for resources in the current period. They provide a useful historical background, however, for a discussion of current and future problems. The total GNP and end-use shares are shown in Tables 1 and 2.*

1. Investment

Investment in the USSR has risen sharply since the end of the Korean War. New fixed investment has the best data base, and our discussion is based chiefly on this component. During the period 1955-59, new fixed investment rose from 18 to 24 percent of GNP, as measured in rubles, with an average annual growth of 14 percent. These figures reflect the major investment programs in iron and steel, fuels and chemicals, and dieselization of the railroads. These programs were inaugurated following 1956, after the anguished discovery that the investment plans of the Sixth Five Year Plan (1956-60) were inadequate.

The rapid rise of the investment share of GNP has not produced any observable increase in the rate of growth. The rate of growth of GNP (see Table 1) has fluctuated up and down with agricultural production having been particularly aided by the bumper harvest of 1958. The series, however, does not suggest any upward trend, and the average rate of growth of 6 percent for 1956-61 is below the 6.8-percent rate of growth of the preceding 5 years. The performance tends to support the hypothesis suggested informally by Professor Abram Bergson that at least a 10-percent growth in capital stock plus a 1-1/2 to 2 percent growth in the labor force is required annually to maintain a 6-percent growth in GNP in the USSR.

Since 1959 the growth of investment has progressively decelerated. New fixed investment grew 7-1/2 percent in 1960 and 3 percent in 1961 and is planned to grow 7 or 8 percent in 1962. We believe that these investment rates will not support a 6-percent growth in GNP for very long into the future.

* Tables 1 and 2 follow on pp. 5 and 6, respectively, below.

2. Defense

While investment in the USSR was rising as a share of GNP, defense was declining. During the period from 1955 to mid-1961, the number of men under arms was reduced, and expenditures on conventional weapons tended to decline. Recent developments indicate that this relative decline in defense may have come to an end. The precise timing and magnitude of the change is a matter of considerable uncertainty, for the nature of data in the defense area makes marginal shifts difficult to detect. Recent developments in new weapons and space, where background data are lacking, make the measurement problem especially difficult.

Table 1

Soviet GNP (Adjusted Value-Added)
1955-62

	Unit of Measure	1955	1956	1957	1958	1959	1960	1961	1962 Plan
Total GNP (adjusted value-added series) a/	Billion 1957 rubles converted to new rubles	110.4	119.1	124.0	136.4	141.4	150.1	157.5 b/c/	164.9 c/
Total GNP (annual rates of growth)	Percent		7.9	4.2	10.0	3.6	6.1	5.0 c/	

a. The GNP series presented (official ORR series) was obtained by applying volume indexes to sector-of-origin weights (adjusted value-added for 1957).
b. Based on an estimated growth of 5 percent for 1961.
c. Preliminary.

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Table 2

Distribution of Soviet GNP (Adjusted Value-Added) by End Use
1955-62

Percent

	1955	1956	1957	1958	1959	1960	1961	1962 Plan
Consumption	63	63	63	62	61	61	61 a/	
Investment (total)	22	23	25	27	28	28	28	
New fixed	18	19	21	22	24	24	24	24
Other	4	4	4	4	4	4	4	
Defense b/	14	13	11	10	10	10	9	10
Administration	2	2	2	1	1	1	1	1
Total c/	100	100	100	100	100	100	100	100

a. Residual of independently estimated total GNP, investment, and defense. Direct evidence on consumption does not strongly support a growth of consumption at the same rate as those of the GNP (5 percent) in 1961.

b. Because of the well-known difficulties in using Soviet prices and uncertainties in defense prices in particular, the defense share of GNP is not a reliable indicator of the resource burden of defense in comparison with other countries. Some effort has been made to adjust the defense share to a factor cost basis so that the trends in shares are meaningful, but defense probably is still too low in level.

c. Because of rounding, components may not add to 100 percent.

II. Recent Developments and the Measurement Problem

Throughout the period since 1955 the USSR has maintained a rapidly rising program of research and development in support of industrial development, space activities, and, most especially, new weapons systems. From a relatively small total in 1955, research and development (including testing and evaluation) has become the tail that wags the defense dog. In particular, the testing and evaluation part of research and development has become in missile programs a much larger expense than in previous weapons programs, including aircraft, and a much larger consumer of hardware.

Our current estimates of military research and development are based on general budgetary and employment data for scientific research institutes. The critical testing and evaluation part of the estimates on research and development is therefore not based on primary data that sensitively relates to that actual activity, and we do not have direct data on costs in this area. On this account the estimates may well be imprecise not only as to level but also as to trend. Most especially they are insensitive to possibly significant annual changes. These uncertainties apply with even greater force to defense expenditures broken down by missions.

Information that has become available during the last year has provided us with new data on timing and scheduling and more detailed characteristics of major new Soviet weapons. On the basis of these data, we plan to calculate a breakdown of expenditures by program and mission for the last few years that will include research and development by program and mission.

These data uncertainties allow the possibility that the defense trend may be more steeply upward than indicated in Table 1* and that the decline of the defense share of GNP may have halted in 1961 or even earlier.

With these caveats we turn to the estimates on current defense expenditures.

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* P. 5, above.

III. Estimated Defense Expenditures, 1955-62

Our current estimates of Soviet defense expenditures, by type and by mission, are presented in Table 3 and Table 4.*

Table 3

Soviet Defense Expenditures, by Type
1958-62

Billion 1957 Rubles Converted to New Rubles

	1958 a/	1959	1960	1961	1962
Personnel	3.4	3.3	3.3	3.0	3.2
Operation, maintenance, and miscellaneous	3.8	3.7	3.7	3.6	3.9
Construction of facilities	0.4	0.4	0.3	0.3	0.3
Procurement of equipment	3.7	4.0	4.5	4.7	5.3
Of which:					
Land armaments	0.5	0.5	0.5	0.4	0.4
Naval vessels	0.3	0.3	0.3	0.4	0.4
Aircraft	0.9	0.6	0.6	0.7	0.7
Ground electronics	0.3	0.4	0.4	0.4	0.5
Missiles	0.2	0.7	0.8	0.8	1.0
Nuclear weapons	0.4	0.7	0.8	1.1	1.3
Research and development	2.2	2.4	2.6	2.8	3.0
Total	13.5	13.8	14.4	14.4	15.7

a. Not available at this time for years before 1958.

* Table 4 follows on p. 9.

Table 4

Soviet Defense Expenditures, by Mission
1958-62

	Billion 1957 Rubles Converted to New Rubles				
	1958 a/	1959	1960	1961	1962
Ground mission	4.6	4.6	4.5	4.2	4.4
Naval mission	1.3	1.3	1.5	1.5	1.6
Strategic attack mission	1.5	1.6	1.7	1.8	2.2
Air defense mission	1.5	1.6	1.9	1.9	2.2
Command and support	0.9	0.9	0.9	0.9	1.0
Research and development	2.2	2.4	2.6	2.8	3.0
Residual	1.5	1.4	1.3	1.3	1.3
Total	13.5	13.8	14.4	14.4	15.7

a. Not available at this time for the years before 1958. It should be noted that research and development in this table is shown as a lump sum and is not allocated by mission. To what extent the estimates of research and development in 1961 and 1962 reflect the large expenditures for the antiballistic missile program is quite uncertain.

These estimates of Soviet defense expenditures reflect certain basic strategic trends, knowledge of which is well founded in spite of uncertainties as to detail. First, the bulk of the growth within the total from 1958 to 1961 is concentrated in the areas of strategic attack and air defense missions and the not unrelated area of research and development. Second, it is clear that a decision was made by 1958 that missiles would form the backbone of these missions, particularly in the case of the strategic attack missions. Third, this decision was implemented somewhat earlier for the air defense mission than for the strategic attack mission. Strategic attack missiles before 1961 were primarily intermediate range. In 1961, emphasis began shifting to the ICBM program.

The estimates for 1961 include an allowance for the halting of demobilization and the rise in the number of men in the second half of the year. The estimates for facilities and procurement reflect our belief (previously stated) that there was no massive diversion of resources to defense in 1961. The pricing of equipment and facilities involves a fair amount

of broad estimation, so that there is a considerable range of uncertainty in many of the components of defense. Nevertheless, we consider it very unlikely that there was an increase in defense of the magnitude announced by Khrushchev in mid-1961.*

* There is persuasive evidence to indicate that the announced increase of 3.4 billion rubles in defense was principally an accounting shift of funds from previously hidden accounts.

IV. Competition for Resources

In 1961 the relatively good production performance of the Soviet economy (except for agriculture) was marred by a pronounced slowdown in the rate of growth of investment. Although these troubles do not appear to be the result of a large-scale shift of resources to defense in 1961, it is plausible that they do stem directly or indirectly from a cumulative drain of resources by the military during a longer period, say 1959-60.

Total construction slowed to a gain of about 1 percent in 1961, and non-housing as well as housing construction decelerated. There were substantial slowdowns and underfulfillments in the growth of investment in nearly all key industries. Although the events of 1961 are still clothed in confusion, some speculation from the known evidence is in order. It is possible that the slowdown in investment is the culmination of trends that started as early as 1959. Table 1* indicates that the slowdown in investment began in 1960. More significantly the rate of growth in the equipment portion of investment declined from 17 percent in 1958 to 8 percent in 1959 to 7 percent in 1960 and 1961. These rates of increase of equipment investment for the past 3 years appear quite small in the light of the following:

1. The 19-percent and 15-percent increases in nonhousing construction in 1959 and 1960.

2. The emphasis on modernization and replacement of old equipment featured in the Seven Year Plan.

3. The increase in production of machinery and equipment, which by our estimate grew some 10 percent annually at a minimum (based on an announced sample). The Soviet claim has been 15 or 16 percent annually.

4. A substantial increase of imported equipment from Western Europe.

* P. 5, above.

These relationships suggest that a cumulative shortage in the supply of machinery and equipment during a period of 3 years came to a head in 1960 and 1961 and was a major contributor to the substantial shortfall in completion of investment projects in those years. Shortages of building materials also were reported,* as in 1959 and 1960, and undoubtedly aggravated the investment situation. In any event, a large backlog of uncompleted projects awaiting the right kind of machinery or special building materials would make an expansion of nonhousing construction activity at the 1960 rate rather dubious policy. Khrushchev last fall suggested that a moratorium on new construction starts might be needed, and stringent limits have been placed on the number of new starts authorized. The machinery and equipment supply problem was further highlighted by Khrushchev's recent suggestion that existing machine building plants must work more shifts.

The statistics suggest that investment has received a decreasing share of the annual increments of output of machinery and equipment. The most likely competitors for these resources are the growing parts of defense expenditures -- that is, new weapons programs including research and development, which consume very much larger quantities of equipment than do older conventional weapons systems. Space programs also are presumably a growing consumer of equipment. Consumer durables have not been significantly increased.

The extent to which this is quantitatively true may be clarified by further research. The competition for resources at the margin by a rapidly expanding research and development program may be most significant, however, in a qualitative sense. The demands of research and development are particularly for advanced and precision equipment, for special materials, and for the highest caliber of designers, engineers, technicians, and project leaders. Civilian investment may have suffered more from shortages of these specialized and highest quality resources than from shortages of resources in the aggregate.

* Electrical cable has been a problem, as has been cement, perhaps because of quality and because of a considerable planned substitution of cement for other materials.

V. Problems for the Future

The Soviet leadership faces -- indeed it has been facing for the last few years -- some difficult choices in allocation of resources both as to objectives and as to means. Persuasive evidence of unsatisfied demands by the leadership is apparent in nearly every major speech. We know how compelling the priorities for economic (especially industrial) growth and national security are in the minds of all the leaders. Khrushchev and other leaders have a strong desire to increase the emphasis on housing, agriculture, and consumer goods. Yet Khrushchev's openly stated wishes on light industry and agriculture of 1961 and 1962 were matched by persuasive arguments on the other side. This is clear from the lack of any substantial shift in resources, as yet, to Khrushchev's recently favored sectors. In the background as an apparently persistent as well as high-priority claimant for resources is the field of new weapons and space.

There is every indication that rising costs face the Soviet leadership at nearly every turn. This is most clear in military and space. For example, an antiballistic missile (ABM) program, to provide a moderately effective defense, would require estimated annual expenditures of 2 billion to 3 billion rubles during the next few years. Simultaneously the economy needs a steadily growing investment program that increasingly requires the high-grade specialized resources presently preempted by the requirements of the defense and space programs. The investment program is particularly behind on machinery of advanced and specialized design. The Seven Year Plan (1959-65) and longer term programs already announced depend on substantial increases in industrial productivity. A general failure of the modernization component could jeopardize these plans.

The problems of agriculture have come to the same impasse. The regime has nearly run out of cheap ideas for increasing output. Rather large quantities of machinery are needed* just for present acreage, both to increase output and reduce labor requirements. But to have a significant effect the machinery must consist of new and improved designs of a wider range of specialized types. Second, the fertilizer needs would be rather minimally met by the 1965 goal of 35 million metric tons.

* Doubling the park of tractors would not be excessive. Nor would it be feasible in the near future. At present rates of growth in output of tractors the park might be doubled by 1970.

The present level of 15 million metric tons is far behind the schedule required to meet the goal of the Seven Year Plan. Once again critical resources for chemical plants are needed. The immediate solution that has been adopted is the plan to plow and plant some 40 million hectares* of grasslands and fallow lands during the next 3 years or so. This program may bring an increase in output in the short run but also creates an immediate demand for more machinery. In the not-too-long run, soil nutrients that were formerly conserved by rotation and grass will have to be replaced by artificial fertilizers.

The housing shortage Khrushchev has always with him. In this area there are not only problems of ordinary building materials but also cable, electrical equipment, and sanitary pipe and equipment both in the housing and in the overhead utility costs. Temporarily, housing construction has been allowed to decline a little. It should be remembered, however, that the volume of housing construction is still respectably large and that a slow but steady increase in housing space per capita will be achieved at this volume of construction.

* Approximately equal to the "new lands" program.

VI. Postwar Patterns of Choice

One can safely conclude that the desires of the Soviet leadership exceed their available resources. This, however, is a problem that men have faced before, and with the USSR it is virtually a way of life. In Stalin's day, difficult choices were made with less argument, public and private.

We can be reasonably sure that the Soviet leaders will move rather quickly and effectively to eliminate any specific bottlenecks that may have appeared in 1961. However, the continuation of 1961 allocation patterns -- the restricted growth of allocations to investment both in basic industry and in consumer sectors -- not only puts consumer goals in danger but also industrial growth. The hardest decisions will be in the competitive areas between the defense and space demands on the one hand and investment requirements for industrial growth on the other hand. If the leadership should decide either to accept lower growth rates or unilaterally to cut back on some projected major military programs, neither alternative would be unprecedented. The leaders have already learned to live with growth rates that are lower than they were accustomed to in the early fifties. The process of adjusting was accompanied by great public anguish, but once done, it was quickly accepted. The consumer goods program and agriculture are certainly important to Khrushchev, but he was able to survive the chagrin of abandoning the 1960-61 meat and milk goals of overtaking the US output, which he so dramatically proclaimed in 1957. The advent of "full communism" will simply be a little delayed. Past patterns of choice indicate that the Communist Party is especially adept at cutting losses and awaiting a more favorable day.

The admirable trait of patience applies even to military goals. Soviet strategy has not in the postwar period aimed at matching US strategic strength. It has been content to take a calculated risk and depend on a deterrent, aimed principally at Europe. This was apparent in the choice of medium-jet bombers over heavy bombers and in intermediate-range missiles over the very expensive first generation ICBM:

VII. A Reasonable Projection

1961-62

What exactly are the decisions which have been recently taken in the Kremlin, in the aftermath of being caught out in a bluff on ICBM deployment, we do not know. The following conclusions are quite tentative* and are based on the available evidence, plus the assumption that the Soviet collective leadership has not sacrificed any one of its goals.

The defense estimates for 1962 in Tables 3 and 4** are based on a continuation of military manpower at the level of the end of 1961, a buildup of ICBM's to moderate deterrant levels (because matching the US in 1962 or 1963 is virtually a physical impossibility), and a continuing growth of air defense missiles.

Two areas of uncertainty should be highlighted. A decision may well be taken to resume demobilization and reduce spending on conventional armaments much more than indicated in our projections. This would offset a considerable part of the 1962 increase. The second uncertainty is in research and development. This component may be higher in 1962 than we estimate.

Beyond 1962

For the next few years, say to 1965, expenditures for research and development, new weapons systems, and space pose a difficult problem for the Kremlin. Nevertheless, we do not believe that Khrushchev has the option that Stalin had of choosing one objective virtually to the exclusion of others. He must choose between slightly favoring defense or slightly favoring investment, and in this competition it seems most likely that consumption will be least favored. However, it cannot be forgotten in allocating annual increments of resources.

If the decision is to guarantee that economic growth does not suffer substantial reduction, then it would appear that investment must receive something close to a constant share of increments in production of machinery and equipment, thus allowing an annual growth of investment of

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* And advanced with hesitation, because National Estimates on Soviet air defense and strategic attack are currently in preparation.

** Pp. 8 and 9, above.

perhaps 12 percent. This would be consistent with continuing industrial growth of 8 or 9 percent and growth of GNP at 5 or 6 percent, with modest gains in food, housing, and consumer goods per capita. Defense, in this allocation plan, would then be held within a constant share of GNP (say 10 percent), but the machinery and equipment portion would still be rising significantly faster than the total defense budget -- at about the same annual rate as equipment for investment.

Alternatively, even if the decision is to favor defense, the critical resources involved place limitations on the increase of defense during the next few years. As long as the emphasis is on research and development and technical improvement of weapons rather than on a buildup of forces based on existing weapons, we do not expect that defense would rise much as a share of GNP, although the effect on the announced plan for improving technology in the civilian economy would be more severe and economic growth more retarded.

What new decisions will be taken with regard to these programs is difficult to judge, but a major causal influence will almost inevitably be the pace set by the US.

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